DEPARTMENT OF NATIONAL DEFENCE
CANADA

OPERATIONAL RESEARCH DIVISION

PERSONNEL OPERATIONAL RESEARCH TEAM

RESEARCH NOTE 9701

COST IMPLICATIONS ON THE USE OF NCM PILOTS

BY

Dr. D. J. Chiasson

March 1997

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Recommended by: Team Leader Approved by: DOR(CAM)

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ABSTRACT

This note provides a preliminary evaluation of potential cost savings by using Non Commissioned Members instead of Officers in a number of pilot positions

RÉSUMÉ

Cette note de service présente une évaluation préliminaire des réductions potentielles des coûts en utilisants les personnelles non officier au lieu d'officiers dans certaines positions occupées par des pilotes.

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INTRODUCTION

1. The task of keeping a proper balance of personnel in the Canadian Forces requires continuous examination of policies. Factors of importance include age, experience, and rank. As well, costs become a factor in this era of cutbacks and where salaries become a dominant factor in the departmental budget. The question has arisen about the possibility of using non commissioned members (NCMs) as pilots. This note provides a limited answer about potential cost savings - specifically concerning salaries. It also lists some of the many issues requiring further consideration if the NCM pilot option were to be further considered.

2. The following findings, regarding costs of using NCM pilots, depend on current and available data. Gathering precise information has been problematic. As a consequence, some of the numbers may differ slightly from paragraph to paragraph.

PILOTS AND COSTS

3. For many years, all pilots in the CF have been officers. This has been accepted not only because of the complexity of the task of flying, but also of the high cost of the training required, the high cost of aircraft and the high level of responsibility. In commercial airlines the pilot of an aircraft has a high status which is reflected in high salaries.

4. The question has arisen about the possibility of using NCMs in some pilot positions in the CF as a cost saving measure. This note examines this issue and - based on a few assumptions which are detailed below, determines a potential saving of about $2.8 million per year.

5. We look at rank and associated cost issues for pilots. For this examination it is convenient to divide pilots, MOC 32, into three large groups, depending of the type of aircraft they fly: namely "fast air", e.g. fighters; multi engine; and helicopter.

6. A recent list of all personnel in the pilot MOC allowed the derivation of the following total direct cost information:

TABLE I

PILOT BILLETS AND DIRECT COSTS

Rank	Total Number	Individual Direct Cost	Total Direct Cost
COL	33	$93,011	$3,069,363
LCOL	116	$84,430	$9,793,880
MAJ	348	$78,619	$27,359,412
CAPT	942	$64,410	$60,674,220
LT	163	$44,504	$7,254,152
2LT	122	$34,362	$4,192,164
Total	1724	—	$112,343,191

7. The "cost" column is the direct cost from the Cost Factors Manual (reference [1]), and includes items typically seen on a pay stub such as CFSAA, CPP, etc. It is not the complete cost: see comments below.

8. The MPIS system does not track pilot specialty, specifically the type of aircraft in which the pilot is trained. From career managers we obtained incomplete - but more focussed - information on numbers of operational level pilots (i.e. below the rank of LCol.) vs aircraft type, summarized as follows:

TABLE II

AIRCRAFT TYPE vs NUMBER OF PILOTS

A/C Type	Unk	Lt	Capt	Maj	Total
"Fighter[1]"	30	48	286	105	469
Helicopter	24	23	274	97	418
Multi-engine	30	16	374	116	536
Unk	2	1	2	5	10
Total	86	88	936	323	1433

9. The unknowns for rank represent about 6% of the above list. If the unknowns are

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[1] the term "Fighter" covers CF-18 Fighters, T-33, T-38 and other aircraft not included in the groups multi engine or helicopter.

proportionally distributed it is possible to scale this information and fill out TABLE III as shown. TABLE III below gives an adjusted distribution of pilot positions vs aircraft type.

TABLE III
ADJUSTED RANK COUNT

A/C Type	Lt	Capt	Maj	Total
Fighter	52	307	114	473
Helo	24	292	105	421
Multi-engine	17	397	125	539
Total	93	996	344	1433

With this breakdown of information we can again apply the direct costs from Table I, and determine the total direct costs for the pilot ranks. For example the 52 Lt's from the above table, at a direct cost from TABLE I of $44,504 each, gives a total cost for the Lt's of $2,314,208.

TABLE IV
COST VS RANK AND AIRCRAFT

A/C Type	Lt	Capt	Maj	Total
"Fighter"	$2,314,208	$19,773,870	$8,962,566	$31,050,644
Helicopter	$1,068,096	$18,807,720	$8,254,995	$28,130,811
Multi - Engine	$756,568	$25,570,770	$9,827,375	$36,154,713
Total	$4,138,872	$64,152,360	$27,044,936	$95,336,168

Most pilots are at the rank of Capt, and so that is where most costs occur. Costs are remarkably uniform across aircraft types.

10. To compare, it is now supposed that a percentage of the officer pilots is replaced with senior NCMs (assume rank of WO specialist group two), and that they fly aircraft in the following Officer / NCM proportions:

TABLE V

PROPORTION OF OFFICER AND NCM PILOT BILLETS

A/C Type	Officer Pilots	NCM Pilots
"Fighter"	90%	10%
Helicopter	70%	30%
Multi-engine	80%	20%

11. We then apply these proportions to all pilots from TABLE III, ie we convert 10% of the Lt "fighter" numbers to NCM, 30% of the Lt helicopter numbers to NCM and so on - keeping the totals the same. The rank distribution becomes as follows:

TABLE VI

POSSIBLE NCM-OFFICER PILOT NUMBERS

A/C Type	NCM	Lt	Capt	Maj	Totals
"Fighter"	47	47	276	103	473
Helo	126	17	204	74	421
Multi-engine	108	14	318	100	540
Total	281	78	798	277	1,434

12. The direct cost for a WO specialist group two is $56,513. Scaling by direct costs gives a new table of total pilot direct cost.

TABLE VII

PILOT COSTS - NCM + OFFICER

A/C Type	NCM	Lt	Capt	Maj	Total
"Fighter"	$2,656,111	$2,091,688	$17,777,160	$8,097,757	$30,622,716
Helo	$7,120,638	$756,568	$13,139,640	$5,817,806	$26,834,652
Multi-engine	$6,103,404	$623,056	$20,482,380	$7,861,900	$35,070,740
Total	$15,880,153	$3,471,312	$51,399,180	$21,777,463	$92,528,108

13. Subtracting the two totals values (that is TABLE IV minus TABLE VII) indicates the department could save in direct costs about $95.3 M less $92.5 M or $2.8 million per year using

NCM pilots.

14. It is possible to arrive at different figures for the saving, depending on the fraction of NCM pilots. For example, looking at the extreme case with the above officer rank distribution the average direct cost for 1,433 pilots is $66,529 compared to $56,513 for WO specialist two. Then the cost saving would be 1,433*($66,529 - $56,513) which is $14.4 million.

15. The $2.8 million saving may be an understatement. The costs used in the calculations are direct cost consisting of average pilot pay, CFSA, CPP, etc. from the Cost Factors Manual. A complete evaluation would, amongst other things, need to consider the indirect costs, including severance pay, provincial health adjustment and $10,520 miscellaneous, also listed in the Cost Factors Manual. The largest item in miscellaneous is movement, $2,969, i.e. cost moves. Other items are also related to this, for example the posting allowance of $619. These costs are listed as the same for all ranks when they are approximately proportional to salary[2]. Thus, the savings may be somewhat larger than the preliminary calculations show.

16. Officer pilot career progression requires that they gain broad experience at a variety of jobs. This means that officer pilots may get relatively few flying hours for the large capital invested in their training. NCM pilots could be expected to spend considerably more of their careers flying. Earlier studies have indicated that highly ranked personnel end up costing the CF much more than a higher salary because the promotion requirements such as training, and varied operations and staff experience are expensive[3]. The number of actual cockpits in the CF is small. We have, for example, only about 60 operational CF-18s. Thus - contradicting the previous paragraph - if the savings apply only to operational pilots, who are a minority, savings may not be as large as predicted. The number of hard cockpit positions is, however, surprisingly large.

17. There is a difficulty in determining precisely what pilots fly which aircraft, and how much time each spends flying. This information is kept in individual records rather than the MPIS data base. Pilot career managers have provided the following information.

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[2] As a rule of thumb, a cost move is about one third of a years salary.

[3] A controversial note by Douglas, reference [2], speculates that each additional Colonel rank in the CF entails an additional annual O & M expenditure of $14.1M (1990$).

TABLE VIII
PILOT BILLETS

Rank	Hard Cockpit	Hard Staff	General	Any	ATL	PML	Actual	Diff.
Col	2	5	25	4	1	37	32	-5
LCol	18	21	70	18	8	135	117	-18
Maj	123	103	94	39	25	384	356	-28
C / Lt	775	149	130	45	25	1124	1036	-88
Total	918	278	319	106	59	1680	1541	-139

18. Thus 918/1680, or 55% of the positions are hard cockpit. Our previous cost estimates ignored Colonel rank personnel, and indeed only two of the 37 (5.4%) of the pilot billets for Colonels are hard cockpit. At the LCol rank, 18 of the 135 positions (13.3%) are hard cockpit. For the lower ranks, 898 of 1508 or 60% are hard cockpit.

19. Further areas for research could include:

- details from individual files regarding training and flying experience, either looking at all pilots - a major task - or taking a sub sample;
- what percentage of career pilots spend flying as opposed to other jobs;
- time taken for various stages of training;
- typical career postings for NCMs, i.e. what percentage of time is spent in job vs career development;
- numbers of pilots per cockpit;
- establishment manning requirements;
- personnel in other branches of the forces who maintain qualifications for comparison;
- availability of more detailed pilot, as well as other MOC information from the MPIS.

CONCLUSION

20. This note has estimated that the use of NCM pilots in a limited number of pilot positions could save the CF approximately $2.8 million annually. Other answers are possible depending on the Officer to NCM ratio. The numbers are a first estimate but should be reasonably accurate.

21. If it is decided to pursue this concept further, it will be necessary to consider details of a new NCM pilot MOC including training, career progression, and pay. Pay may be critical, because the savings to the CF may result in a lower retention rate for NCM pilots. It will be necessary to examine characteristics of the Officer Pilot MOC, and compare it with any proposed model for an NCM Pilot MOC. Critical factors include fraction of career spent operationally flying compared to other tasks for Officer and NCM pilots. Optimum flying age may be a factor. Numbers must be firmed up by researching actual number of years flying and actual career paths of pilots. This includes examination of what positions in the CF are hard pilot, and what positions are hard officer.

22. The problems of training and retaining quality pilots in the CF is complex and emotional. We have given a simple answer to a complex question. It this answer is "interesting", future work could look in detail at some of the questions mentioned above.

LIST OF REFERENCES

[1] Cost factors Manual 1995-1996, Directorate of Costing Services Publication, 23 March 1995.

[2] Douglas, A. J., The Relationship Between Rank Structure and O & M Expenditure: A Quantitative Assessment, Enclosure to ORA 3563-41305-1 (DMS), 14 Oct 1993.

ANNEX A
NCM PILOTS
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1. The following table lists where pilots are posted within the CF. Looking at where pilots are provides some insights into what pilots do. For the sake of brevity, the list includes only UICs where there are ten or more pilots. This accounts for 1,427 of the 1,724 pilots. One base will be listed several times, for example Greenwood includes CFB Greenwood as well as squadrons 405 and 415.

TABLE A-I
PILOT BILLETS

UIC Short Name	2LT	LT	CAPT	MAJ	LCOL	COL	Total
2 CFFTS	74	19	43	5	1		142
3 CFFTS	19	7	33	4	1		64
427 TAC HEL SQN	1	16	33	4	1		55
408 TAC HEL SQN		18	32	4	1		55
430 ETAH		10	30	4	1		45
410 TAC F(OT) SQ		3	35	5	1		44
AIRCOM HQ			13	18	7	3	41
HS 423	1	11	19	6			37
413 (T&R) SQN		7	22	3	1		33
435 T & R SQN	1	6	23	3			33
429 (T) SQN		6	22	4	1		33
403 HEL OTS			26	5	1		32
424 ETS	1	5	21	3	1		31
434 CS SQN		5	20	4	1		30
ATG HQ			18	8	4		30

436 (T) SQN		3	22	4	1		30
442 (T&R) SQN	1	4	19	3	1		28
HS 443		8	13	6			27
407 (MP) SQN		8	14	4	1		27
405 (MP) SQN		3	20	4			27
415 (MP) SQN		3	19	3			25
CFCSC				17	4		21
EX DUTY USA			15	6			21
DGAD			5	12	1	3	21
441 TAC F SQN			15	4	1		20
425 ETAC			15	4	1		20
416 TAC F SQN			15	4	1		20
NORAD HQ			5	8	4	2	19
426 (T) TRG SQN			13	6			19
433 ETAC			13	4	1		18
404 (MP&T) SQN			14	3	1		18
HT 406			16	1	1		18
10 TAG HQ	1		8	5	3		17
CFB COLD LAKE	2	3	7	2	1	2	17
CFS			13	2	1		16
437 (T) SQN			10	5	1		16
CFB GRNWOOD	1		10	3	1	1	16
CC-NAEWF			4	7	2	1	14
FG/CANR HQ			7	6	1		14
AETE			7	5	1	1	14
CFB TRENTON			7	4	2	1	14
417 CS SQN	1	3	9	1			14
440(T&R) SQN		2	10	1	1		14
COS J3				10	4		14
103 RU		1	10	2			13
414 CS SQN	1	2	7	2	1		13
ACOO			2	8	3		13

412 (T) SQN			10	2			12
BFC BGTVLLE			7	3	1	1	12
RMC	4		4	3	1		12
FIS	1		10	1			12
439 ESC		4	7	1			12
431 (AD) SQN			10	2			12
MAG HQ			3	5	2	1	11
EX DUTY UK			7	2	2		11
DGMC	2		2	3	2	1	10
CFB WINNIPEG	2		5	2	1		10
CFB SHRWTR			6	3	1		10
Totals	113	157	805	263	72	17	1,427

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